

Air Traffic Controller

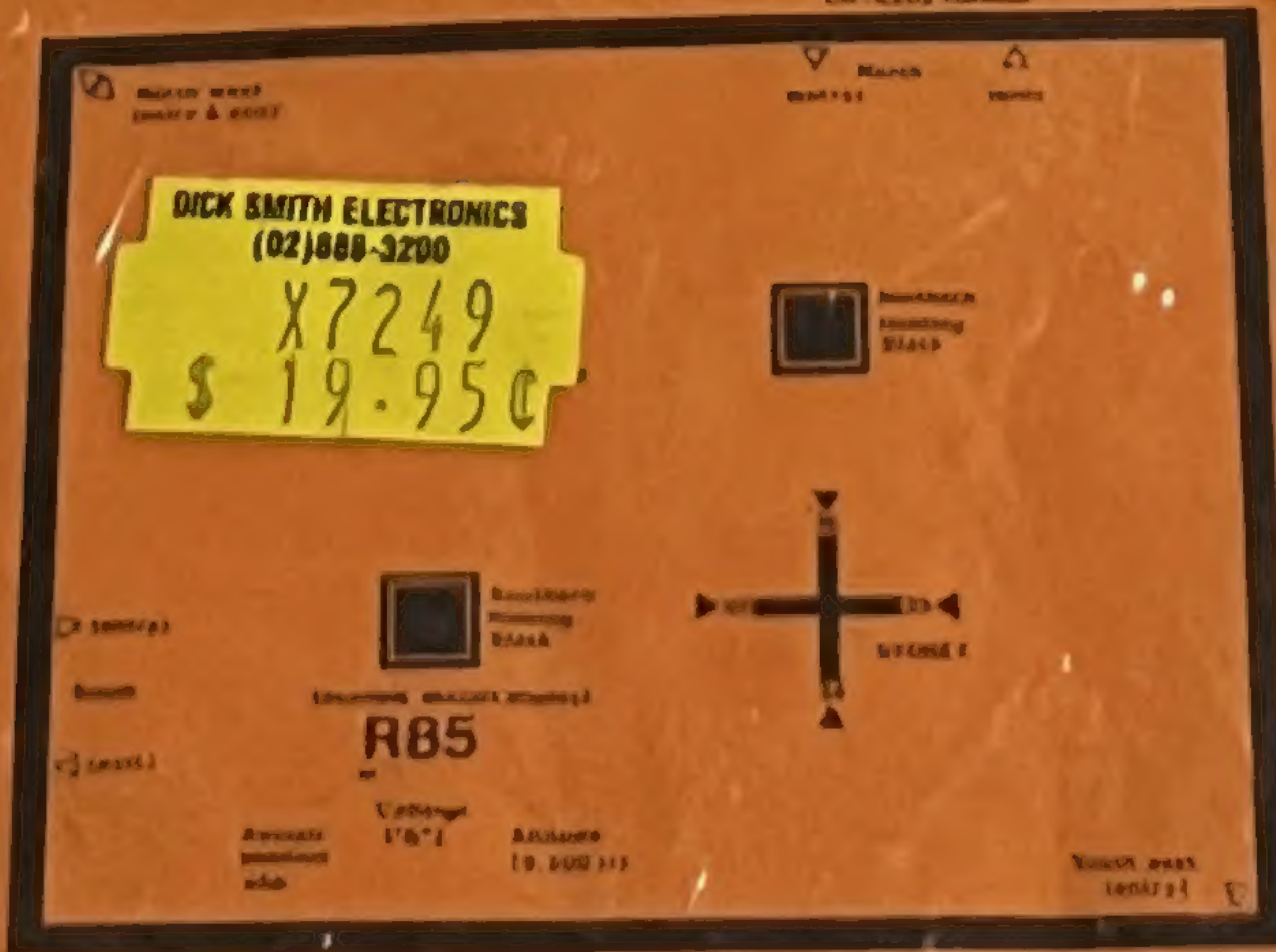


A.T.C. 30 N.MILE RADIUS RADAR MAP

ENR Ensign
A-1 Air Force
A-2 Air Force

FL Lowland
BL Blackman
CB Cavanaugh
CS Cava Martin

PR Park
DR Dorman
CB Cavanaugh
AB Air Force



ABA Air Force

Air Traffic Controller

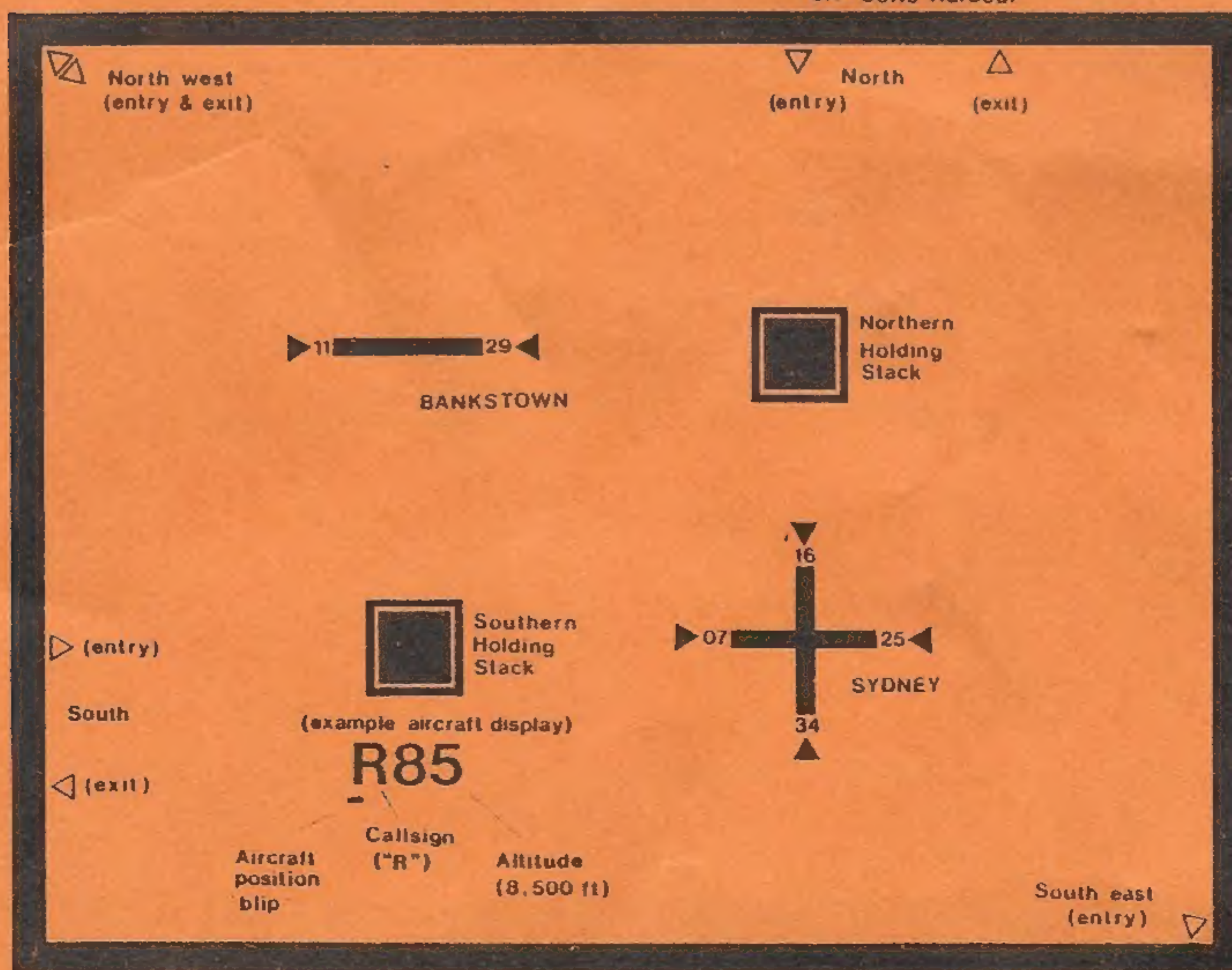


A.T.C. 30 N.MILE RADIUS RADAR MAP

SNG Singapore
AS Alice Springs
DU Dubbo

PH Perth
ML Melbourne
CB Canberra
HB Hobart

TL Townsville
BN Brisbane
CG Coolangatta
CH Coffs Harbour



AKL - Auckland

AIR TRAFFIC CONTROL SCENARIO

(or how to become an approach/departure's controller in one easy lesson!)





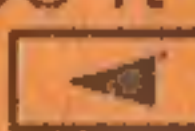
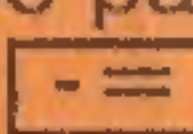

Game Initialisation: After loading the program using the "CRUN" command (approx. 4 mins.) the game will be ready for initialisation. Press Y (yes) or N (no) depending upon whether or not you have a line printer connected and switched on, when the question appears. Next a degree of difficulty of 1,2,3, . . . thru to 9 may be selected, 1 being the easiest, 9 being the hardest. Let's select "4" for this example run. Next is the runway selection, runway numbers are derived from dividing the approximate magnetic heading of the runway by 10, to give a 2 figure number. Press "1" for runway 16 Sydney departures (all aircraft taking off from Sydney will initially be heading south towards the bottom of the screen). Now press "1" again for runway 16 Sydney arrivals (all aircraft must use the North/South runway for landing and obviously in this case must also be heading south upon landing). Now press "2" for runway 29 Bankstown departures (all aircraft taking off from Bankstown will initially be heading west towards the left side of the screen). Finally press "2" again for runway 29 Bankstown which means you must use that same runway direction to the west for arriving aircraft into Bankstown. A description is now displayed (and printed if applicable) of your runway and difficulty selection. The above runway configuration is a relatively easy combination, you may like to experiment later with more complex set-ups which result in "nose-to-nose" traffic situations, like runway 34 departures and runway 16 arrivals at Sydney etc. After a short period, the in-flight details screen will be printed up on your television. If you have no printer it is a good idea to copy some relevant information off that display, such as who has to be processed into Bankstown instead of Sydney, and also your first departures sequence (A-K departures are in alphabetical order). If you have a printer this will be done for you and the game will automatically start with the appearance of the radar screen, otherwise press "SHIFT" "R" when you have sufficient details copied down. Either of the details pages "A-K" or "L-Z" may be selected at any time by pressing "SHIFT" "A" or "SHIFT" "L" as applicable, then "SHIFT" "R" to return to your radar screen once the details page is displayed. The details screen displays the aircraft callsign, aircraft type, departure and destination aerodromes (abbreviated), assigned level/altitude (50 = 5,000 ft, 78 = 7,800 ft etc.), DME (straight line distance from present aircraft position to Sydney airport) in nautical miles or "O/G" on-ground or "_____" if the aircraft cannot yet supply an accurate DME distance from Sydney, and a coloured "control" indicator.

The Purpose of Air Traffic Control: The legal definition states: "To provide the safe, orderly and expeditious flow of air traffic within controlled airspace." The same applies in the game! You have 11 arriving aircraft and 9 departing aircraft which you must give commands to, in order that they land at the correct airport, using the correct runway, or depart and are sent off your radar screen to the next sector at the correct radar exit location and at a height of at least 7,000 ft (70). While doing this, at least 5nm horizontally or 1,000 ft vertical separation must be maintained between all aircraft under your control. Any non-compliance of the above will terminate the game and an explanation of "what went wrong" will be given. The exception to this is aircraft who are either attempting to land at the wrong airport, using the wrong runway or are too high on final approach, which will result in that aircraft "going - round" (aborting the landing), in which case you must assign an altitude of at least 1000 ft, and a heading to rejoin the circuit. Aircraft below 500 ft will not accept a heading change.

Playing the Game: For the purpose of this explanation, we shall use just five aeroplanes.

eg.	A	A300	BN/SY	A/L : 80	DME : 40 NM
	B	BE20	BK/CB	A/L : O	DME : O/G
	C	LR35	AKL/BK	A/L : 70	DME : 35 NM
	D	B747	SY/PH	A/L : O	DME : O/G
	E	C172	CB/SY	A/L : 50	DME: 44 NM (N.B. Example Only!)

If you can mentally follow this traffic sequence through, you'll be well on the way to becoming a rated player of "Air Traffic Controller"! As A is already on your radar, it is under your control. We are using runway 16 for arrivals at Sydney, so A will be exactly on the centreline to the runway (if extended outwards). As we see no major

separation problem in front of **A**, we may clear **A** for final by pressing "A" (wait for high beep) then press "0" (wait for high beep to ensure input!). There will be a blue control flag (graphic square) appearing with aircraft **B** [on (A-K) details screen], therefore **B** is taxiing at Bankstown and is ready for take-off. We can assign **B** 4,000 ft (because it will eventually cut across the path of **E** at 5,000 ft, we assign no higher than 4,000 ft), by pressing "B" then "4". **B** will then take off, and once above 500 ft (05) we may issue a southerly heading by pressing "". Next we have a Learjet **C** coming from Auckland, New Zealand to overfly Sydney for a landing on runway 29 at Bankstown. Press 0 to clear it for final, and the aircraft will commence descent to zero altitude when ready, we could also press " " to turn **C** north so we can later turn it west onto the runway centreline for Bankstown. Be careful to ensure now that separation is maintained with **A** coming from the north. **D** will now be taxiing at Sydney to go to Perth via the southern exit point. Press "D" then "9" to clear it for take-off and climb to 9,000 ft (90), soon after take-off a westerly heading should be assigned by pressing "". Forgotten about **B**? Once it will definitely be clear of **E** [who is only a slow Cessna 172 at 5,000 ft (50) we may assign **B** climb to 8,000 ft (80) by pressing "B" then "8" so that it will exit the screen at a high enough altitude. As **B** nears the bottom quarter of the screen, we should turn it west by pressing "". Notice we did not assign **B** 9,000 ft because **D** (a departing boeing 747) is on climb to 9,000 ft and would eventually catch up! **C** should be turned west shortly by pressing " " so it will make a safe landing at Bankstown. Now **E** must be vectored up to the same path that **A** took, so it will land from the north onto runway 16 at Sydney. Press " " to give a heading of north east, after pressing "E" to ensure the instruction will go to aircraft **E**! **E** may also be cleared to descend to zero altitude by pressing "0". When **E** nears the northern holding pattern it should be given a southerly heading by pressing "". By the time **E** lands, all the other aircraft should also have been correctly processed too. Hopefully by now you will have a basic understanding of Air Traffic Control, and are ready to process a genuine air traffic sequence! Remember, don't let yourself get too busy, in real life sometimes aircraft have to hold or fly around in circles awaiting an approach clearance. You can do this easily by pressing the hold instruction key "W" after pressing the appropriate callsign button. That aircraft will then proceed to do continuous left hand turns as soon as it reaches one of the two holding patterns. Assigning a heading will cancel the hold instruction. If your radar screen becomes cluttered with too many aircraft, maybe near a holding pattern, take a note of a couple of callsigns and instruct them to squawk standby (display position blip only, without callsign and level) by pressing "SHIFT" and "N". To return that aircraft's "radar paint" to normal, simply press "N". Now you're solo . . . good luck!

Handy Tips: Always ensure you don't allocate a level to an outbound aircraft that is the same as an inbound aircraft on the same route. Hence double check the levels of any aircraft inbound from the north west (SNG & DU) and from the north, those from CH and from the south, those from HB, as these are the only aircraft which come onto your radar screen on a conflicting opposite direction departure track. In addition to this your departures from Sydney who may conflict with the south east (AKL) arrivals track should be initially assigned no higher than 4,000 ft until clear of that track on which aircraft may be as low as 5,000 ft. Don't maintain aircraft at an altitude too high, or too low, for too long, otherwise they may end up being too high on final approach or too low to exit at a high enough altitude. It's a good idea to write down only the next aircraft that is ready for take-off and return to your radar display as soon as possible. Therefore as soon as the details page appears its best to press "SHIFT" and "R" immediately to ensure that the radar screen re-appears on the next update.

Written by J. Keech & P. Russell
COMPUTER SOFTWARE

GENERAL INFORMATION & KEYBOARD EXPLANATION

[A] thru [Z]	Aircraft Callsigns
[0] thru [9]	Altitude assignment (zero thru 9,000 ft.)
[W]	Hold at next holding stack in 3 minute left hand patterns.
"SHIFT" [N]	Squawk stand-by (position blip only – no callsign and altitude)
[N]	Squawk normal (complete blip, callsign, and altitude)

[▲] : [▼] : [▶] : [◀]	North : South : East : West
[–=] : [:*] : [P] : [;+]	North east : South east : North west : South west

"SHIFT" [R]	30 nautical mile radius A.T.C. radar screen
"SHIFT" [A]	In-flight details (callsigns A-K)
"SHIFT" [L]	In-flight details (callsigns L-Z)

Speed: Aircraft are grouped into four speed categories as follows (ground speed in nautical miles per update; altitude change per update during climb or descent).

Light single engined aircraft; 1½nm; 350 ft

C172 : Cessna 172 PA28 : Piper Cherokee

Turbo prop twin engined aircraft; 2nm; 500 ft

F-27 : Fokker Friendship BE20: Beechcraft 200 Super King-air

Commercial and Corporate Jets; 3½nm 875 ft

B747 : Boeing 747 Jumbo A300 : Airbus LR35 : Learjet

High Speed Military Jets; 4nm; 1000 ft

F111 : "F" One Eleven MIR3 : Dassalt Mirage

The Radar Map: A quick reference radar map explanation is provided on the front cover. It is 60 nautical miles across, 60 nautical miles down, and 85 nautical miles diagonally across, which is basically 30nm in radius. The holding stacks are each 20nm from Sydney. Exit points are marked by white lines on the radar. It is not necessary for you to vector landing aircraft exactly onto the runway centreline. A tolerance of approx. 1nm each side is provided as it is the pilots responsibility to finally "line up" when nearing touch down.

Position Blips:	White:	aircraft that are to be processed to land at Sydney.
	Red:	aircraft that are to be processed to land at Bankstown.
	Blue:	departing aircraft that are to be processed to exit your radar screen at the correct boundary/exit point and are to be at least 7,000 ft in altitude when they leave your control/radar screen.

Coloured Control Graphic: On the in-flight details page, a coloured control graphic may be displayed at the end of a particular aircraft's information line. . .

Blue rectangle: Taxiing, and is the next aircraft ready for take-off which will accept take-off (initial altitude assignment) instructions.

Red rectangle: Airborne, under your control and currently on your radar screen.

White Checked Square: Has been successfully processed.